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ABSTRACT

This study documented how individual differences in personal experiences, cultures, learning styles, and interests affect the demonstrated abilities of children who are gifted, based on qualitative case study research with five children from early childhood classes at the University of Denver's Ricks Center for Gifted Children. Information was obtained from classroom observation, school records, and parent and teacher interviews. It was found that general intellectual abilities, specific aptitudes, nonintellective traits, and environmental factors combined in unique ways for each child. Two characteristics were displayed by all five children, a depth of understanding and strong memory skills, and these characteristics demonstrated the factor of general intellectual ability. Special aptitudes were demonstrated in the specific areas such as mathematics, language, and art. Nonintellective traits were exhibited in personality differences, while environmental factors were illustrated in language and cultural differences. Other traits assessed included: language/verbal, visual/spatial, fine motor, social, interests, perfectionism, and introversion. It is concluded that gifted programming should be individualized to fully maximize the child's abilities. (Contains 32 references.) (SW)

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Ricks Center for Gifted Children
College of Education

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Case Studies in Diversity: Individual Differences in Abilities and Traits of Young Gifted Children

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Abstract

The purpose of this study was to document how individual differences in personal experiences, cultures, learning styles, and interests impact the demonstrated abilities of young gifted children. Case studies were done on five children from the Early Childhood classrooms at Ricks Center for Gifted Children on the campus of the University of Denver. A qualitative, multiple case study design allowed for indepth observation and data collection on each child. Initial themes were derived from the data and systematic data reduction resulted in pattern generation. Single case analysis of each individual child and comparative analysis of the cases with each other (cross-case analysis) were used to summarize these patterns.

Using Tannenbaum's(1983) psychosocial definition of giftedness as a framework for describing the data, the study demonstrated that general intellectual abilities, specific aptitudes, nointellective traits, and environmental factors combined in unique ways in each individual child. Two characteristics were displayed by all five children, a "depth of understanding" and strong memory skills. These two characteristics demonstrated the factors of general intellectual ability. Special aptitudes were demonstrated in the specific areas such as mathematics, language, and art. Non-intellective traits were exhibited by personality differences in the children, while environmental factors were illustrated in language and cultural differences.

The educational importance of this study surfaces in its demonstration that each individual gifted child has unique educational needs. In order to fully maximize their abilities, gifted programming should be individualized to meet the particular needs of each gifted student.

It is 9:30 on a Monday morning in the Early Childhood class at the Ricks Center for Gifted Children. The children are involved in "Center Time," where they have a choice of centers located around the room. There are many exciting activities from which to choose: blocks, art table, computers, writing center, tangrams, games, and a science center. Five children are busily engaged in activity in this setting. Adam, age four years six months, is playing chess with a friend, one of his favorite pastimes. He has just captured the other player's queen and is very excited. Daniel, age four years and ten months, is explaining his drawing of a train to a teacher. "You see," exclaims Daniel, "This structure is a ladder that allows the conductor to climb on the roof and check the motor and the engine is run by steam." Tara, four years and nine months old, is seated at the art table. She is extremely focused on completing a very detailed drawing of a butterfly. Melinda, six years old, and Rhonda, five years and seven months old, are playing dress-up near a battered black trunk filled with dress-up clothes. Melinda is the mommy, and Rhonda is the baby.

All these children attend the Ricks Center for Gifted Children, a private school for gifted children located on the campus of the University of Denver. They are part of a class of sixteen students. Previous research has demonstrated that as a group, young gifted children possess characteristics that distinguish them from their peers such as the capacity to learn at faster rates, advanced verbal ability, strong memory skills, abstract reasoning ability, long attention span, curiosity, passionate interests, and advanced social abilities (Hollinger & Kosak, 1985; Keating, 1976; Lewis & Louis, 1991; Lewis & Michaelson, 1985; Parke & Ness, 1988; Piechowiski, 1991; Roedell, Jackson, Robinson & Ward, 1980). However, when one looks at particular children, individual differences will exist.

It is well documented that both inter- and intra- individual variability exists among young gifted children (Barbour, 1993; Roedell, 1989; Wright & Borland, 1993). Little research has been done that documents qualitative differences in individual children, however (VanTassel-Baska, 1993). Gruber (1981,1986) proposed that to adequately understand the beginnings of a gifted and creative life, we need a more qualitative approach that studies individuals in the process of construction. Case studies of individuals can provide a holistic view of a subject, providing "grounded" insight leading to theory building and hypothesis generation (cited in Cohen, 1989). These grounded insights are generated through inductive analysis on which the researcher develops hypotheses from the descriptions provided by informants (Creswell, 1993). Theory is derived from the data, not imposed on the data, as in more quantitative approaches. The purpose of this study is to describe the individual differences and similarities of five young gifted children through qualitative case studies.

The Children

In the fall of 1993, five children from Early Childhood classes at the Ricks Center for Gifted Children were selected for participation in this study. Data was gathered during the 1993-1994 school year. Each of the children had been previously selected for participation in the gifted program through a multi-faceted identification process that included a developmental history, parental questionnaire, and activity-based assessment. Children were purposefully chosen to be included as part of the study to provide multiple perspectives of race, gender, and culture. A brief description of each selected child follows. Names have been changed for confidentiality. Descriptions include quotations from parents, teachers, and psychologists (who completed individual educational evaluations of the children between the ages of four and five).

Adam

Adam was born on April 6, 1989. He is a white male, with curly reddish-blond hair, and sparkling blue eyes. Teachers described Adam as, "A bright and inquisitive boy who is comfortable with his classmates." According to his teachers, "Adam enjoys being able to participate in group discussions and is eager to contribute his thoughts and ideas." He gets along well with his classmates socially. They reported,

> He (Adam) is very happy to be able to identify with students who share his enthusiasm for learning. He is well-liked by his peers and gets along with both male and female classmates. He plays well in large and small groups.

Adam's full-scale IQ on the Wechsler Preschool and Primary Scale of Intelligence-Revised (WIPPSI-R) was 154. This ranked him at the 99.98 percentile which falls in the very superior range of intelligence. Both his verbal and performance scores were in the very superior range as well. His Verbal Score of 154 was at the 99.98 percentile level, and his Performance Score of 136 was at the 99th percentile level.

"Adam thoroughly enjoys all academic activities," his teachers stated. He demonstrated a particular strength in reading. According to his parents, he basically taught himself to read and write. When he was evaluated at the age of four, he read at a fourth grade level. Adam's fine motor skills, at that time, were not well developed and all sources reported he had an "immature pencil grasp" and some difficulty with writing. His teachers stated,

> At times, Adam has trouble grasping his pencil properly, which tends to inhibit his writing process, but he is

coming to realize on his own, with simple reminding, how to handle a pencil correctly. Recently, after a writing activity, Adam looked up and stated, "You know it really does make a difference when you're the boss of the pencil."

Adam was curious and asked a lot of questions. His mother reported that he asked questions such as, "Where does the lightning go?" and "Why does the moon seem to follow us while we're are driving?" All informants mentioned his ability to understand and adapt new concepts quickly. Adam's parents noted, "He prefers thinking games rather than pretend, but will occasionally make things up." Adam learned to play chess when he was four and teachers stated, "He enjoys playing with children several years older than himself."

Tara

Tara was born on February 7, 1989. She is very petite, with black hair and dark eyes. She is of Chinese descent. Chinese and English are both spoken in Tara's home, and Tara is fluent in both languages.

Tara was described by all sources as a cooperative, "shy and quiet" youngster. Tara obtained a Full Scale IQ on the WIPPSI-R of 148. She was, according to evaluation, "Very adept at tasks involving overall verbal fluency, abstract reasoning, conceptual thinking, and common sense application of knowledge." Her outstanding intellectual abilities were fairly evenly divided in the areas of verbal and visual/spacial reasoning. Her evaluation stated, "Both areas fall solidly in the very superior range of functioning." Tara's memory skills were also "outstanding." Her mother stated, "She can complete sentences by memory of stories (about 150 words) read to her about five times in a space of two or three weeks."

Tara's verbal abilities on the Kaufman Test of Educational Achievement (KABC), were affected by her "shy personality." Her examiner noted, "On a number of vocabulary items, such as 'audience' and 'polite', she thought silently about the word but could not be encouraged to share her thoughts." In her class, teachers stated, "She hesitates to share her reading abilities; when she does participate, her reading abilities are clear to her classmates and teachers."

One of Tara's major strengths discerned by her examiner was arithmetic in which she earned scores at the 99th percentile. In math, her teachers stated, "Tara especially enjoys working with tangrams, multicolored triangles, and geoboards." She seemed to conceptually understand addition, subtraction, and multiplication. Her teachers noted, "She loves math and art; she draws very detailed, elaborate pictures and is outstandingly artistic for her age."

All sources noted that Tara was a perfectionist. According to her parents, "She perseveres on projects until they are finished." The only area of relative weakness in Tara's evaluation profile was the puzzle completion

task. Her evaluator felt this was due to her perfectionistic tendencies. He stated,

> She performed within the average range and her performance was compromised, in part, by the time she spent getting the pieces in perfect alignment. This is a timed test and bonus points are provided for by the rapid completion of puzzles. On several items, Tara correctly finished the puzzles with great speed but continued working until all the pieces were aligned perfectly.

Tara was a quiet and reserved child in the classroom. She rarely raised her hand to volunteer to answer a question, though she was cooperative if asked. Teachers related, "Tara does not initiate conversations with most of her classmates and teachers; she prefers to play with her one special friend at recess."

Rhonda

Rhonda is of African-American descent and was born on July 1, 1988. Her family would be considered one of low socioeconomic level. She was described by teachers as, "A kind and thoughtful child who thinks about others and their feelings." Rhonda displayed a pronounced split in her IQ scores on the WIPPSI-R. Her verbal IQ was 105, while her performance IQ was 129. This resulted in a Full Scale IQ of 117.

"Rhonda is just beginning to learn to read," according to her teachers. They reported,

> Presently she (Rhonda) is anxious to learn to read, which at times causes her to rush to figure out simple words. She wants to rely on her memory skills to recognize whole words and becomes frustrated when she is unable to do so and gives up easily.

Her educational evaluation and parents agreed that Rhonda had excellent memory skills. Her parents stated, "She remembers everything." Her educational evaluation noted, "She has a great visual memory."

Rhonda enjoyed drawing and all sources mentioned her "artistic and creative" abilities. Teachers recounted, "She enjoys experimenting at the art table and taking risks in her work." Rhonda also enjoyed dress-up and imaginary play. Her teachers noted, "She loves to engage in dramatic play during choice time."

Socially, Rhonda was a friendly and happy child who related well with her peers. Teachers stated,

> Rhonda enjoys working and playing with her peers and is sought out by others to work with. She plays well in both large and small groups. She is very interested in the concept of fairness and seeing everybody is treated equally with kindness.

Her parents agreed that Rhonda understands and was interested in the concept of fairness. They stated, "She's a cop."

Daniel

Daniel was born on February 9, 1989. His family comes from Russia, and he is of average height and build. He was described by his teachers, parents, and psychological evaluations as, "An inquisitive, verbal, and self directed child." His full scale IQ score on the WIPPSI-R was 154. All sources agreed that Daniel displayed highly superior skills in verbal reasoning, particularly in his knowledge of vocabulary and advanced concepts. His evaluator noted, "Daniel has outstanding strengths in his word knowledge and abstract reasoning skill. He is able to define words at a very superior level compared to others of his age." In a discussion in the classroom about the definition of ditch, he explained, "A ditch is a ravine."

His visual-perceptual skills were also considered "outstanding." He enjoyed drawing very detailed, innovative pictures, and building large structures with creative components according to his teachers and parents. His teacher reported, "Daniel's illustrations show a great detail and sophistication and he takes great amounts of time and pride in creating them." According to his evaluator, "His fine motor skills are highly developed for his age."

Daniel's teachers, parents, and evaluators all noted that his memory skills were "excellent." They also agreed that one of his strengths was in his ability to understand abstract concepts and transfer them to new situations. His teachers noted,

> Daniel loves learning and he has a great deal of knowledge about his areas of interest. As intense as his love for learning is, however, his determination to involve himself only with activities of his own preference at times prevents him from participating in activities.

Daniel prefers to work alone or in a small group. He rarely joins in large group, unless, as his teachers noted, ". . . . it's his ideas that are being expressed." At recess, teachers reported,

> He often chooses to interact with adults only, and when others attempt to join in his conversations with teachers, he sometimes becomes angry and

> aggressive. When he is angry or upset, he announces his feelings and accounts for his aggressive talk and anger by explaining, "The reason I don't want to be nice is because I haven't had enough sleep" or "The reason I don't want to do this is because I don't like it and won't have it."

Melinda

Melinda, according to her psychoeducational evaluation, is a "first generation Mexican-Chicana female." She was born on November 8, 1987. She is bilingual in Spanish and English. Melinda is small, with long dark hair and eyes.

Melinda's Full Scale IQ score on the WIPPSI-R was 121, which according to her intellectual evaluation,

> . . . . suggests a high average to superior range of intellectual functioning. This score, however, is likely an underestimate of her intellectual potential, given the fact that the subtests which are most susceptible to the effects of bilingualism are relatively lower than others.

Melinda displayed "outstanding" mathematical abilities when evaluated. According to teachers, "Melinda has a real love of math and she shows very strong skills in applied math as well as strong skills in calculation. She understands the concepts of both addition and subtraction." Melinda also demonstrated abilities in the arts. Teachers noted, "Melinda shows a lot of talent in the dramatic, musical, and movement activities." All sources reported that Melinda had a strong memory. Teachers stated, "She is very good at memorizing songs and recalling important experiences and objects."

Socially, teachers reported,

> Melinda is a quiet child who prefers playing with just one friend at a time. Because she is so sensitive, it is often difficult for her to resolve her conflicts with peers. She enjoys all aspects of school, but sometimes has trouble focusing and using her time wisely.

The Research Study

A qualitative, multiple case-study design was selected for this study. This method allowed for indepth observation and data collection for each child (Creswell, 1993). The intent of qualitative research is to understand a particular social situation, event, role, group, or individual (Creswell, 1993; Locke, Spirduso, & Silverman, 1987). The data that emerge from a

qualitative study are descriptive and reported in words (Creswell, 1993; Fraenkel & Wallen, 1990; Locke et. al., 1987; Marshall & Rossman, 1989; Merriam, 1988) and the researcher is the primary instrument in data collection (Creswell, 1993; Eisner, 1991; Fraenkel & Wallen, 1990; Lincoln & Guba, 1985; Merriam, 1988).

The two researchers involved in this study are members of the staff at the Ricks Center for Gifted Children and were provided access to the data sources of documents, parents, and teachers. Data sources included the Individual Educational Plans (I.E.P.) written for each student, intellectual evaluations completed by psychologists (which included IQ and Achievement testing), developmental questionnaires completed by parents, interviews with parents and teachers, and observations of students in the classroom (See Data Collection Matrix). To ensure validity and reliability, data were triangulated through the multiple sources. Informants were presented with the finished descriptions to check for accuracy of researcher interpretations. Thick, rich, and detailed descriptions of each child are provided so that anyone interested in transferability will have a solid framework for comparison (Creswell, 1993).

The data generated in this study resulted from a variety of perspectives directed toward the examination of the characteristics of five young gifted children. The data analysis process was assisted by the use of a qualitative data analysis program, Textbase Alpha. Initial themes were derived from the data and systematic data reduction resulted in pattern generation. Single case analysis of each individual child and comparative analysis of the cases with each other (cross-case analysis) were used to summarize these patterns (Yin, 1989).

Themes

Understanding

"Understanding," was the term used most often by the informants to describe the children's advanced ability to understand and apply concepts. Webster's Dictionary reports the meaning of understanding to be,"Comprehension, the power to think and learn, and intelligence"(Guralnik, 1987, p. 651). This ability was described by Daniel's teachers as, "The ability to understand abstract concepts and transfer them to new situations." Melinda's mother described it as follows,

> When she (Melinda) was two years and eleven months old, her father sent her out to the garden with a magnifying glass to look for ants. It was October, 1990, and there were no ants. She came into the kitchen, put the magnifying glass on the floor, went back to her brother's bedroom pulled out a book on insects, came back to the kitchen, sat down, she shuffled through the pages until she found ants, got her magnifying glass and showed them to her

Data Collection Matrix

Child *Interests*	Information Source	Characteristics										
		Under-standing	Art, Drama, Music	Memory	Language/ Verbal	Visual/ Spatial	Fine Motor Skills	Social Abilities	Math	Perfection-ism	Intro-Version	Language/ Culture Differences
Tara	Parents	X		X							X	X
Art	IEP (1)	X				X	X			X	X	
Puzzles	Evaluations	X		X	X	X	X		X	X	X	X
Math	Observations			X		X	X		X	X	X	X
Steven	Parents	X		X	X	X	X					
Learning	IEP (1)	X		X	X	X			X			
Building	IEP (2)	X		X	X		X					
Math	Evaluations	X		X	X	X	X					
Explaining	Observations	X			X		X					
Rhonda	Parents	X		X		X	X	X				
Art	IEP (1)					X		X				
Math	IEP (2)	X	X	X		X		X				
	Evaluations		X	X		X	X	X		X		X
	Observations	X	X				X					X
Adam	Parents	X		X	X			X				
Chess	IEP (1)	X			X			X				
Learning	IEP (2)	X			X			X				
Art	Evaluations	X		X	X	X		X	X			
Reading	Observations	X		X	X							
Melinda	Parents	X	X	X		X			X			
Art	IEP (1)		X			X			X			X
Music	IEP (2)	X	X			X			X			X
Dance	Evaluations	X		X		X		X	X			X
Math	Observations		X	X								

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father.

Memory

The children's memories were referred to by all sources as "excellent," "outstanding," or "strong." Adam's parents described his memory:

> (Adam) still talks about my grandmother who (sic) he met briefly last May. (He) also met my hairdresser once last September. He recently told me what color her car was, which he saw for about one minute.

Daniel's parents stated, "He remembers details of incidents that happened along time ago that we've never reviewed with him." Rhonda's parents noted that she remembered "everything."

Language/Verbal

Tara, Daniel, and Adam displayed "outstanding" verbal abilities, according to their examiners. Tara's verbal abilities were not displayed in the classroom, however. Teachers recounted, "She hesitates to share her verbal abilities in class." Melinda and Rhonda's verbal abilities were not considered to be one of their strengths. Melinda's teachers reported, "She will still respond in Spanish when asked to identify letters and their sounds." Rhonda's evaluator noted, "She needs to enrich her vocabulary and to learn to expand verbal expression."

Reading was a facet of verbal ability in which the children displayed dissimilarities. Adam's evaluations stated, "He reads at the level of a nine or ten year old." Teachers noted Daniel, Rhonda, and Melinda, "Are just beginning to learn to read". Tara's evaluation stated, "She reads at a first grade level."

Visual/Spatial

Tara and Daniel displayed strengths in the area of visual/spatial reasoning. They had facility with puzzles and spacial problem solving with tangrams and geoboards. These two children, sources stated, enjoyed drawing very detailed and innovative pictures. Teachers noted that both Daniel's and Tara's illustrations showed "great detail and sophistication." Tara's evaluation reported,

> She (Tara) has extremely well developed spatial organization and fine motor dexterity, combined with visual perception. She performed at the 99th percentile on both geometric and block design subtests. She competently reproduced all the

geometric designs with precision and accuracy. She has clearly defined laterality in her right hand and has a well developed pencil grip.

Fine Motor Skills

Fine motor skills were mentioned as being "outstanding" for two children, Tara and Daniel. As was stated above, these two children were very interested in drawing detailed pictures. For example, Daniel's evaluator noted, "Daniel got intensely involved in drawing a detailed picture for this examiner which showed creativity and motor control beyond what should be expected for his age." Tara's teachers reported her artistic abilities were excellent and they stated, "Her sophisticated drawings are very much admired and enjoyed by her classmates." Adam's fine motor skills were not very well developed, as he still had some difficulty with grasping his pencil and with writing.

Mathematics

Mathematics was considered a strength for Tara and Melinda. Tara was described by her examiner as having "an outstanding capacity for mathematical reasoning;" while Melinda's teachers noted she showed strong skills in both applied math and calculation. Daniel's teachers reported, "He loves numbers and working with them." However, his achievement scores on the Kaufman Test of Educational Achievement (KABC) in math were average. Rhonda, also, displayed average math skills. Adam's math skills were noted as "above average" by his evaluator, but they were not mentioned as a particular strength.

Social Abilities

The children displayed a wide range of social abilities. According to his teachers, Adam interacted well with both large and small groups, and enjoyed working on projects with his classmates. Rhonda was also described as working well with her peers, and teachers noted her thoughtfulness and concern for others' feelings. She was especially interested in the concept of fairness. Melinda was portrayed as a sensitive child who preferred to play with one friend at a time. Tara was characterized by all sources as "shy and quiet." Teachers noted that she did not initiate conversations with children and teachers and that she participated in classroom discussions only if asked questions and encouraged to share. Teachers reported, "Daniel has not bonded with any particular child in class and often chooses to interact with adults only."

The Arts

All the children "enjoy" art and drawing according to informants. Four children, Melinda, Rhonda, Tara, and Daniel were reported as displaying strengths in particular areas of the arts. It was mentioned by both parents and teachers that Melinda showed a lot of ability in musical and movement activities. Parents, teachers, and evaluators all noted that Rhonda had creative, artistic, and dramatic abilities. Tara and Daniel's teachers noted the detail and sophistication of their art.

Interests

The children exhibited a wide variety of interests based on information supplied by participants. Informants talked about interests as the activities that children "enjoyed." It was interesting to note that the areas children enjoyed were areas that displayed significant strengths. Tara and Daniel, who demonstrated good visual/spatial ability; loved drawing, puzzles, and building. Tara and Melinda, who displayed significant strengths in mathematics, "loved math." Both Adam and Daniel, who exhibited advanced verbal abilities, were described by teachers as very curious and interested in asking a lot of questions. Melinda and Rhonda displayed abilities in music and drama, and they also "loved" these areas.

Most of the children participated in activities outside of their interest areas. Daniel, however, would only participate in his areas of interest. Daniel's examiner noticed he tried to get out of doing activities he didn't like. The examiner stated, "He likes to say things like, 'My brain is too tired to do that right now.'"

Perfectionism

Tara was described by all sources as "a perfectionist." Her teachers stated, "She wants to spell things exactly as they should be spelled and this hinders her creative writing projects, as she often becomes too interested in a particular word and its spelling, rather than a particular thought she might have written down." The psychologist noted:

> The only area of relative weakness in Tara's profile was the puzzle completion task, Object Assembly. She performed within the average range and her performance was compromised, in part, by the time she spent getting the pieces in perfect alignment. On several items, Tara correctly finished the puzzles with great speed but continued working until all the pieces were aligned perfectly.

Introversion

Tara was described by all sources as being quiet and shy. This prevented her from participating fully in class. It also resulted in teachers being somewhat unaware of her verbal abilities as she hesitated to share her reading abilities and rarely participated in class discussions.

Language and Culture

Tara, Rhonda, and Melinda would all be considered ethnic minority children. Ethnic minority children are those whose ethnic groups have sociocultural patterns that differ from those of the predominant society. These groups include African-Americans, Hispanic-Americans, American Indians, and Asian Americans (Sattler, 1992).

Some cultures are bilingual, and bilingualism can affect the development of verbal skills (Sattler, 1992). Melinda's verbal abilities seem to reflect this. Her verbal skills were not as well developed as her mathematical abilities. Her parents stated, "Melinda is learning Spanish and English at the same time; therefore her language development is different from that of a monolingual child." Bilingualism, however, did not seem to have affected Tara's abilities. None of the informants mentioned her bilingualism as affecting her abilities.

Rhonda's skills also seemed to be affected by culture. According to Sattler (1992), ethnic minority children may be deficient in motivation, test practice, reading, and exposure to culture and, therefore are handicapped taking tests. Rhonda scored lower on her achievement and IQ tests than the other children, although she shared the characteristics of understanding and memory with the other higher scoring children. Her test scores might underpredict her abilities. Standardized testing has been show to underpredict performance by African-American children (Baldwin, A., 1977; Mercer, J., 1979; Williams, R., 1970; Zigler, E. & Butterfield, E., 1968).

Discussion

The children in this study exhibited many of the abilities cited previously by researchers including early verbal ability, strong memory skills, abstract reasoning ability, curiosity, interests, and advanced social abilities. However, none of the children displayed all these characteristics. Even though two of the children, Adam and Daniel, received identical IQ scores of 154, their manifested abilities in specific areas were very different. Adam read at fourth grade level while Daniel was just beginning to learn to read. They had very different personality traits. Adam was described as an inquisitive child who enjoyed all academic activities and got along well with his classmates, while Daniel was described a self-directed child who only participated in activities of interest and did not get along very well with his classmates.

Tannenbaum (1983; 1991) proposed that five factors must elegantly

interweave together in a gifted individual if they are fully to develop their gifts: (1) superior general intellect; (2) distinctive special abilities; (4) a supportive array of nonintellective traits; (4) a challenging and facilitating environment; and the (5) smile of good fortune at critical periods in life. Children, therefore, are considered "potentially" gifted, not manifestly so, and they shine in comparison to their age mates, not by universal adult standards. "Making the leap from promise to its fulfillment requires not only ability, but also ancillary personal attributes, along with enriching and opportunistic life experiences, all of them reinforcing each other in a rare and subtle combination" (Tannenbaum, 1991, p. 27). The themes generated from this data support Tannenbaum's proposal.

Superior General Intellect

Tannenbaum defined general intellectual ability as the "g" factor, "which is defined roughly as some kind of mysterious mental strength denoting abstract thinking ability and shared by a variety of specific competencies" (Tannenbaum, 1991, p. 29). Two of the themes seemed to be factors of this general intellectual ability: understanding and memory. These two factors were displayed by all the children in the study. All the children were described by informants as having excellent memory skills. They remembered things that had happened a long time ago and did not need things repeated numerous times in order to learn them. For example, Adam's parents stated, "He quickly learned new letter sounds including some consonant blends."

The term "understanding" was used by the informants to describe what might be considered abstract reasoning ability, the ability to understand a concept and transfer the knowledge to another venue. Adam's teachers described this ability as the integration of facts. They stated, "He is able to understand abstract concepts and integrate them with other facts for unique new insights which he shared with the class"; while Melinda's teachers described it more as an understanding of how different concepts interrelate. They stated, "She shows a good understanding of how the different worlds of living things - plants and animals - need each other and affect each other."

Special Aptitudes

Some behavioral scientists are critical of the assumption that giftedness can be identified by general gifted abilities, or the "g" factor (Tannenbaum, 1991). For example, Gardner's (1983) Theory of Multiple Intelligences proposed that individuals may display strengths in seven distinct areas of intelligence: logical/mathematical, spatial, linguistic, musical, kinesthetic, interpersonal, and intrapersonal. Though the students in this study displayed some common general abilities, many abilities were demonstrated in different degrees by individual children and could be termed, "distinctive special aptitudes." These abilities included:

mathematics, language/verbal, visual/spacial, social, and abilities in the arts.

The "distinctive special aptitudes" were diverse and individual in each child. Melinda and Tara exhibited high levels of mathematical ability. Teachers stated, "Melinda showed very strong skills in applied math as well as strong skills in pencil-paper-math." Daniel, Rhonda, and Adam displayed more average skill levels in this area. Adam and Daniel displayed outstanding verbal abilities. Daniel's evaluator noted his exceptional vocabulary and verbal reasoning ability. Adam had very advanced abilities in reading. Melinda and Rhonda did not display this verbal ability. "Rhonda needs to enrich her vocabulary," according to her examiner. Rhonda and Adam demonstrated excellent social abilities, while Melinda, Tara, and Daniel had more difficulties in this area. Tara and Daniel exhibited excellent visual/spatial and fine motor skills. Evaluations noted their exceptional fine motor skills and visual/spacial reasoning. The other children's abilities were not as strong in this area

Nonintellective Factors

Tannenbaum's nonintellective factors included personality traits such as motivation and self-concept. As Tannenbaum stated:

> Relating personality traits to giftedness is basically a chicken and an egg problem. Nobody knows for sure whether, and to what extent these attributes are *causes, concomitants, or consequences* of such successful achievement (Tannenbaum, 1991, p. 34).

In this study, these factors were exhibited in the themes of interest, perfectionism, and introversion. These factors contributed to the children's manifested abilities. Though Daniel teachers reported, " He has a lot of knowledge in areas of interest," he refused to take part activities in which he did not display any interest. The other children were more motivated to engage in all types of academic activities.

The children displayed strengths in their areas of particular interest. Those children who, according to their teachers, "loved math," for example, exhibited distinct abilities in mathematics. Children who particular enjoyed art were excellent artists.

Characteristics of perfectionism and introversion were manifested in Tara. Her excellent verbal abilities were not displayed in the classroom. The psychologist who evaluated her stated,

> In a group of highly verbal youngsters, Tara might be content to remain very focused and attentive, yet silent. A school environment that would encourage Tara to demonstrate her visual motor strengths within a small group might be very helpful. It could increase Tara's motivation

to use verbal communication to explain or instruct peers about her expertise.

Perfectionism also impacted Tara's capabilities. Her writing ability was not developing because of her focus on traditional spelling.

Environmental Factors

"Giftedness requires social contexts that allow it to mature" (Tannenbaum, 1991, p. 36). These social contexts are displayed in the environmental conditions in which a child lives. A child lives in several environmental contexts, the closest being the family, peer group, school, and community, while the remotest are the larger economic, social and political institutions of that environment (Tannenbaum, 1991).

These environmental factors were manifested in the themes of language and culture. These factors had significant impact on two of the children's abilities, Rhonda and Melinda. Rhonda displayed skill weaknesses that are many times brought to school by African-American gifted children (Baldwin, 1987). As stated by Borland and Wright (1994), "The effects of poverty, racism, and class bias are real, often resulting in significant educational disadvantages" (p. 165). Yet she displayed abilities in memory, understanding, art, and creativity that needed to be addressed through acceleration and indepth learning. Melinda's bilingualism impacted her development of language abilities, and she also required skill development in particular areas of language. Her math abilities, however, were excellent, and she needed advanced programming to meet these abilities.

Chance Factors

"The influence of the unexpected and unpredictable on the course of human development" (Tannenbaum, 1991, p. 40), or chance factors, was the only area in Tannenbaum's filigree of factors that was not demonstrated in the data. Since the children in this study were only four, five, and six, it could be that chance factors had not as yet had a significant impact on any of their lives.

Conclusions and Implications

The school's role in the facilitating gifted students' development, according to Tannenbaum's theory, is to provide a challenging and facilitating environment. Borland (1989) suggested another way of conceiving of giftedness, as an educational need created by a discrepancy between current educational offerings and a student's outstanding potential abilities. A need that should result in the provision of appropriate special educational services (Wright & Borland, 1993). This study displayed that the students involved might be termed gifted by their special educational

needs. Their outstanding abilities in understanding abstract concepts, for example, required an in-depth curriculum presented on a more abstract level than their age mates. Their excellent memories dictated curriculum be presented with less repetition and at a faster pace.

This study demonstrated, however, that the factors of general ability, specific aptitudes, nonintellective factors, and environment combine in unique ways in each individual gifted student. Gifted programming must be individualized to meet the varied abilities and needs of each gifted student. Further studies documenting the ways multiple factors combine in individual children to create their unique diversity will provide educators with information to help them plan appropriate programming to meet the needs of gifted students.

An Update on the Children, April, 1995

Four of the children continue to attend the Ricks Center for Gifted Children and are now in the Early Primary classrooms. Melinda left to attend another school. The children continue to display similar abilities and traits as they did during the original study.

Adam

Adam continues to enjoy all academic activities. He still reads far above his age level ability. He continues to use "extended vocabulary, focuses easily and loves to read," according to his teachers. He still prefers spending his free time "on the computer or working in his math folder" instead of participating in imaginary play. His fine motor difficulties seem to be disappearing and his has recently taken a real interest in math. His teachers note, "Adam's spatial abilities are especially evident in his work with Tangrams and Froebel Gifts." He has a good understanding of the differences between two and three dimensional objects and is able to use both a ruler and a compass." His present teachers' assessment of his social abilities are very similar to his past teachers,

> Adam's positive outlook, his sensitivity toward others, and love of learning make working with him a pleasure. He always makes valuable contributions to our discussions. He continues to be well liked by his peers.

Tara

Tara continues to have excellent mathematical abilities and demonstrates an understanding of the concepts of addition, subtraction, and multiplication. She continues to love to draw and create detailed pictures. She uses an extended vocabulary, focuses easily, has a long attention span, and pays close attention to details. "She enjoys reading and has little

difficulty in sounding out one and two-syllable words," note her present teachers.

Her introversion does not seem to be as pronounced as during the previous year. According to her teachers, "Tara has adjusted well to Early Primary and continues to participate more fully each day."

Rhonda

Rhonda's verbal abilities continue to be less well developed than the other children's. Her present teachers state,

> Rhonda continues to work on her consonant sounds, which she can now identify at both the beginning and ends of words. She can also identify some high frequency sight words. She continues to confuse d with b.....She is not always able to transfer her knowledge of a word from one page to the next. Rhonda frequently substitutes words in her reading that are inconsistent with the meaning of the piece. For example, she may substitute "pit for "pot" which still makes sense, or "slept" for "stayed" which no longer keeps the meaning. She uses a combination of context, and decoding cues to help her determine unknown words, but relies heaviest on pictorial clues.

Rhonda seems to be relying on her excellent visual memory to help her with her reading, but does not seem to be too successful as yet. She continues to enjoy math and conceptually understands the processes of addition, subtraction, and multiplication. According to her teachers, "Rhonda demonstrates her spatial abilities in her work with Tangrams, pattern blocks, and Froebel Gifts." Her present teachers, as her past, note her excellent social abilities and her interest in the concept of fairness.

Daniel

Daniel continues to be a very verbal, very self directed child. His present teachers state, "In September, when Daniel was assessed, he was not willing to demonstrate any knowledge of letters or their sounds. He commented that he was not interested in learning to read because it was too hard." His present teachers also note that he demonstrates incredible artistic talents. The detail, use of color, and composition of his pictures are truly amazing."

Daniel persists in his difficulty with other children. His teachers assert,

Daniel is very easily offended. He often forgets to use his words and strikes out physically. For example, when he and another child have been cleaning up Legos and Daniel has felt that the other child was not doing the job correctly Daniel has thrown Legos at the child. He then finds it very difficult to apologize or accept responsibility for his actions.

The children's personality traits, special aptitudes, and general intellectual ability continue to combine in unique ways. As the researchers continue to follow these children as they mature, how these characteristics facilitate or hinder the development of their abilities will be documented.

Notes

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